Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. **(Currently amended)** A circuit to control the capacitance of a variable capacitor in a strictly linear mode through a steady tuning voltage and to achieve a high Q-factor at the same time; comprising:

a set of individual small capacitors;

a set of capacitor switching stages, comprising;

a ~~set of~~ switching devices, allowing a steady ramp-up/ramp-down phase between the points of being fully switched on and fully switched off, and where said switching devices ~~are~~ is connected in series with one ofsaid capacitors ~~of said set of capacitors~~, to connect a multiple of said capacitors in parallel;

a ~~set of~~ circuits to control the switching operation in a ramp-up/ramp-down manner between the points of being fully switched on and fully switched off, provided to ~~each of~~ said ~~set of~~ switching devices;

a ~~set of~~ translinear amplifiers ~~stages~~ to produce the ramp-up/ramp-down signal for each of said set of switching devices, ~~and~~where said translinear amplifier is implemented within said ~~set of~~ circuits to control the switching operation;

a circuit to individually provide the threshold points for each ~~individual~~ of said capacitor switching stages; and

a circuit to provide a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to the inputs of all of said ~~translinear amplifier~~ capacitor switching stages.

2. **(Previously amended)** The circuit of claim **1** wherein said switching device with steady transition phase. is a FET transistor.

3. **(Previously amended)** The circuit of claim **2** wherein said switching device with steady transition phase. is a P-MOS or N-MOS junction FET.

4. **(Previously amended)** The circuit of claim **2** wherein said switching device with steady transition phase. is a CMOS FET.

5. **(Previously amended)** The circuit of claim **1** wherein said circuit to individually provide said threshold points for each individual capacitor switching stage generates a set of reference values, one value for each capacitor switching stage.

6. **(Currently amended)** The circuit of claim 5 wherein said circuit to generate a set of reference values, one for each of said ~~translinear amplifier~~capacitor switching stages, is implemented as a chain of resistors.

7. **(Original)** The circuit of claim **1** wherein said translinear amplifier has a gain of 1, the typical gain of translinear amplifiers.

8. **(Original)** The circuit of claim **1** wherein said translinear amplifier has a gain differing from 1, which gives one more degree of freedom to optimize operating parameters, like overlapping of capacitor switching operation.

9. **(Currently amended)** The circuit of claim **1** wherein said circuit to provide a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, is a single signal connected to all ~~amplifier inputs~~of said capacitor switching stages.

10. **(Previously amended)** The circuit of claim **1** wherein the circuit to provide the output reference level for the translinear amplifier, is a single signal connected to all translinear amplifier reference outputs.

11. **(Original)** The circuit of claim **1** wherein said capacitors are discrete capacitor components.

12. **(Previously amended)** The circuit of claim **1** wherein said capacitors are manufactured on a planar carrier, separate from the circuit carrier.

13. **(Original)** The circuit of claim **1** wherein said capacitors are integrated on a semiconductor substrate, but on a separate substrate than said switching devices and amplifiers.

14. **(Original)** The circuit of claim **1** wherein said capacitors are integrated on a semiconductor substrate and on the same substrate as said switching devices and amplifiers.

15. **(Original)** The circuit of claim **1** wherein said capacitors are manufactured as a Metal-Oxide structure.

16. **(Original)** The circuit of claim **1** wherein said capacitors are manufactured as a junction capacitor.

17. **(Currently amended)** A circuit to control the capacitance of a variable capacitor in a strictly linear mode through a steady tuning voltage and to achieve a high Q-factor at the same time by sharply cutting off the control signal, when said switching device is outside its steady transition area; comprising:

a set of individual small capacitors;

a set of capacitor switching stages, comprising:

a ~~set of~~ switching devices allowing a steady ramp-up/ramp-down phase between the points of being fully switched on and fully switched off, and where said switching devices ~~are~~ is connected in series with one ofsaid

capacitors ~~of said set of capacitors~~, to connect a multiple of said capacitors in parallel;

a ~~set of~~ circuits to control the switching operation in a ramp-up/ramp-down manner, provided to ~~each of~~ said ~~set of~~ switching devices~~,~~ as long as said switching device operates in its steady transition area, i.e. within the points of being fully switched on and fully switched off;

a translinear amplifiers to produce the ramp-up/ramp-down signal for said switching device, where said translinear amplifier is implemented within said circuit to control the switching operation;

a circuit to drive said switching device to a fully on status, when said switching device is outside said steady transition area on the lower resistance side, and implemented in combination with~~in~~ said ~~set of circuits to control the switching operation~~ translinear amplifier~~.~~;

a circuit to drive said switching device to a fully off status, when said switching device is beyond said steady transition area on the higher resistance side, and implemented in combination with~~in~~ said ~~set of circuits to control the switching operation~~ translinear amplifier~~.~~;

~~a set of translinear amplifier stages to produce the ramp-up/ramp-down signal for each of said set of switching devices, and implemented within said set of circuits to control the switching operation;~~

a circuit to individually provide the threshold points for each individual capacitor switching stage; and

a circuit to provide a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said ~~translinear amplifier~~capacitor switching stages.

18. **(Previously amended)** The circuit of claim **17** wherein said circuit to drive said switching device to a fully-on status, when said switching device is outside its desired steady transition area on the lower resistance side is provided by additional circuit elements, working as a signal-limiting function.

19. **(Previously amended)** The circuit of claim **17** wherein said a circuit to drive said switching device to a fully-off status, when said switching device is outside its desired steady transition area on the higher resistance side is provided by additional circuit elements, working as a signal-limiting function.

20. **(Previously amended)** The circuit of claim **18** wherein said signal-limiting function to drive said switching device to a fully-on status, when said switching device is outside its desired steady transition area on the lower resistance side, are implemented within the translinear amplifier circuit.

21. **(Previously amended)** The circuit of claim **19** wherein said signal-limiting function to drive said switching device to a fully-off status, when said switching device is outside its desired steady transition area on the higher resistance side, are implemented within the translinear amplifier circuit.

22. **(Original)** The circuit of claim **17** wherein said translinear amplifier has a gain of 1, the typical gain of translinear amplifiers.

23. **(Previously amended)** The circuit of claim **17** wherein said translinear amplifier has a gain differing from 1, which gives one more degree of freedom to optimize operating parameters, like overlapping of capacitor switching operation and signal cut-off at the edges of the steady transition area.

24. (Cancelled)

25. (Cancelled)

26. **(Currently amended)** A circuit to control the capacitance of a variable capacitor in a strictly linear mode through a steady tuning voltage and to achieve a high Q-factor at the same time and to compensate the temperature deviation of the capacitor switching device; comprising:

a set of individual small capacitors;

a set of capacitor switching stages, comprising:

a ~~set of~~ switching device~~s~~ allowing a steady transition phase between the points of being fully switched on and fully switched off, and where said switching device~~s~~ ~~are~~ is connected in series with one of said capacitors ~~of said set of capacitors~~ to connect a multiple of said capacitors in parallel;

a ~~set of~~ circuits ~~to~~ control the switching operation ~~for each~~ of said ~~set of~~ switching devices~~,~~ including a steady transition phase;

a ~~set of~~ translinear amplifier ~~stages~~ to produce said control signal for said switching devices~~,~~ and implemented within said ~~set of~~ circuits ~~to~~ control the switching operation;

a circuit to compensate the temperature deviation of said switching device, and implemented within said circuit to control the switching operation;

a circuit to individually provide the threshold points for each ~~individual~~ of said capacitor switching stages; and

a circuit to provide a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said ~~translinear amplifier~~capacitor switching stages.

27. **(Previously amended)** The circuit of claim **26** wherein said circuit to compensate the temperature deviation of said switching device is provided by feeding a modified reference voltage to said translinear amplifier's output reference point, to mirror a temperature correcting signal into the control signal of said switching device.

28. **(Previously amended)** The circuit of claim **27** wherein said circuit to compensate the temperature deviation of said switching device, uses a device of

the same type as said switching device itself, to produce an exact equivalent of said temperature deviation.

29. (Cancelled)

~~29.A circuit to control the capacitance of a variable capacitor with a steady, but predefined non-linear relation to the tuning voltage, through a steady tuning voltage and to achieve a high Q-factor at the same time; comprisinga set of individual small capacitors;~~

~~a set of switching devices allowing a steady ramp-up/ramp-down phase between the points of being fully switched on and fully switched off, and where said switching devices are connected in series with saidcapacitors of said set of capacitors, to connect a multiple of said capacitors in parallel;~~

~~a set of circuit to control the switching operation in a ramp-up/ramp-down manner between the points of being fully switched on and fully switched off, provided to each of said set of switching devices;~~

~~a set of translinear amplifier stages to produce the ramp-up/ramp-down signal for each of said set of switching devices, and implemented within said set of circuits to control the switching operation;~~

~~a circuit to individually provide the threshold points for each individual capacitor switching stage;~~

~~a circuit to provide a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said translinear amplifier stages and;~~

~~a circuit to provide a non-linear relation between said tuning voltage and said threshold points.~~

30. **(Currently amended)** The circuit of claim ~~29~~**1** wherein said circuit to individually provide said threshold points for each ~~individual~~ of said capacitor switching stages, generates a set of reference values, one value for each capacitor switching stage, in a non-linear relation between said tuning voltage and said threshold points.

31. **(Currently amended)** The circuit of claim ~~29~~**30** wherein said a circuit to individually provide the threshold points, for each circuit to control the switching operation, in a non-linear relation between said tuning voltage and said threshold points, is provided by specifically selecting the steps of a set of reference values in a way, to achieve said desired non-linear relation.

32. **(Currently amended)** The circuit of claim ~~30~~**31** wherein said circuit to generate ~~a~~ said set of reference values, one for each of said ~~translinear amplifier stages~~ circuit to control the switching operation, is implemented as a chain of resistors.

33. **(Currently amended)** A method to control the capacitance of a variable capacitor in a strictly linear mode through a tuning voltage and to achieve a high Q-factor at the same time; comprising:

providing a set of individual small capacitors, a set of capacitor switching stages, comprising: a ~~set of~~ switching devices allowing a steady ramp-up/ramp-down phase between the points of being fully switched on and fully switched off, and where said switching devices ~~are~~is connected in series with one of said capacitors ~~of said set of capacitors~~, to connect a multiple of said capacitors in parallel, a ~~set of~~ circuits ~~to~~ control the switching operation in a ramp-up/ramp-down manner between the points of being fully switched on and fully switched off, provided to ~~each of~~ said ~~set of~~ switching devices~~,~~ a ~~set of~~ translinear amplifier ~~stages~~ to produce said control signal for said ramp-up/ramp-down switching, operation, and a circuit to individually provide the threshold points for each ~~individual~~ of said capacitor switching stages, a circuit to provide a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said ~~translinear amplifier~~capacitor switching stages;

providing said threshold points for each individual capacitor switching stage;

supplying said signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said capacitor switching stages;

amplifying, by means of a translinear amplifier, the difference of said tuning voltage and said threshold points within each capacitor switching stage to produce the linear control signal for a ramp-up/ramp-down switching operation;

fully switching on one of said switching devices in order to completely switch one of said small capacitors in parallel to the already switched on capacitors, one after the other to linearly increase the total capacitance;

fully switching off one of said switching devices in order to completely disconnect one of said small capacitors from the other switched on capacitors, one after the other, to linearly decrease the total capacitance; and

ramping up or ramping down the switching operation of one of said switching devices to partially switch, with increasing/decreasing share, one of said small capacitors in parallel to the already switched on capacitors, one after the other;

~~amplifying, by means of a translinear amplifier, the difference of the capacitance tuning voltage and the threshold points of each amplifier stage to produce the linear control signal for said ramp-up/ramp-down switching operation;~~

~~providing said threshold points for each individual capacitor switching stage; and~~

~~supplying a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said translinear amplifier stages.~~

34. **(Previously amended)** The method of claim **33** wherein linearly controlling the switching operation applies to a FET transistor as the switching device with steady transition phase.

35. **(Previously amended)** The method of claim **34** wherein linearly controlling the switching operation applies to a P-MOS or N-MOS junction FET as said switching device with steady transition phase.

36. **(Previously amended)** The method of claim **34** wherein linearly controlling the switching operation applies to a P-channel or N-channel CMOS FET as said switching device with steady transition phase.

37. **(Original)** The method of claim **33** wherein individually providing said threshold points for each individual capacitor switching stage generates a set of reference values, one value for each capacitor switching stage.

38. **(Currently amended)** The method of claim **37** wherein generating a set of reference values, one for each of said ~~translinear amplifier~~capacitor switching stages, is performed by a chain of resistors.

39. **(Original)** The method of claim **33** wherein continually switching on one of said small capacitors in parallel to the already switched on capacitors applies to discrete capacitor components.

40. **(Previously amended)** The method of claim **33** wherein continually switching on one of said small capacitors in parallel to the already switched on capacitors applies to capacitors manufactured on a planar carrier, separate from the circuit carrier.

41. **(Original)** The method of claim **33** wherein continually switching on one of said small capacitors in parallel to the already switched on capacitors applies to capacitors integrated on a semiconductor substrate.

42. **(Currently amended)** The method of claim **33** wherein supplying a tuning voltage, dedicated for the voltage controlled capacitance change, to all of said ~~translinear amplifier~~capacitor switching stages uses a single signal connected to all amplifier inputs.

43. **(Currently amended)** A method to control the capacitance of a variable capacitor in a strictly linear mode through a tuning voltage and to achieve a high Q-factor at the same time by sharply cutting off the control signal, when said switching device is outside its steady transition area; comprising:

providing a set of individual small capacitors, a set of capacitor switching stages, comprising: a ~~set of~~ switching device~~s~~ allowing a steady ramp-up/ramp-down phase between the points of being fully switched on and fully switched off, and where said switching device~~s~~ ~~are~~is connected in series with one of said capacitors in parallel~~, one for each of said small capacitors~~, a ~~set of~~ circuit~~s~~ to control the switching operation in a ramp-up/ramp-down manner between the points of being fully switched on and fully switched off , provided to ~~each of~~ said switching device~~s~~, a circuit to overdrive said switching device to a fully-on status, when said switching device is outside its steady transition area on the lower resistance side, a circuit to overdrive said switching device to a fully-off status,

when said switching device is beyond its steady transition area on the higher resistance side, a ~~set of~~ translinear amplifier ~~stages to produce said control signal for said switching functions~~, and a circuit to individually provide the threshold points for each ~~individual~~ of said capacitor switching stages, a circuit to provide a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said ~~translinear amplifier~~capacitor switching stages;

providing said threshold points for each individual capacitor switching stage;

supplying said signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said capacitor switching stages;

amplifying, with a translinear amplifier, the difference of said tuning voltage and said threshold points of each amplifier stage, to produce the linear control signal for a ramp-up/ramp-down switching operation;

steadily ramp-up/ramp-down switching on or off ~~one of~~ said switching device~~s~~ in order to partially switch, with increasing/decreasing share, ~~one of~~ said small capacitor~~s~~ in parallel to the already switched on capacitors, one after the other, to linearly increase or decrease the total capacitance;

linearly controlling the switching function for each of said ~~continuous~~ switching device~~s~~ with steady ramp-up/ramp-down phase, when said switching device is in its steady transition area;

driving said switching device to a fully on status, when said switching device is outside its steady transition area on the lower resistance side; and

driving said switching device to a fully off status, when said switching device is beyond its steady transition area on the higher resistance side~~;~~.

~~amplifying, by a translinear amplifier, the difference of the capacitance tuning voltage and the threshold points of each amplifier stage to produce the linear control signal for said continually switching operation;~~

~~providing said threshold points for each individual capacitor switching stage; and~~

~~supplying a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said translinear amplifier stages.~~

44. **(Previously amended)** The method of claim **43** wherein driving said switching device to a fully-on status, when said switching device is outside its desired steady transition area on the lower resistance side uses additional circuit elements, working as a signal-limiting function.

45. **(Previously amended)** The method of claim **43** wherein driving said switching device to a fully-off status, when said switching device is outside its steady transition area on the higher resistance side uses additional circuit elements, working as a signal-limiting function.

46. **(Previously amended)** The method of claim **44** wherein said signal-limiting operation to drive said switching device to a fully-on status, when said switching device is outside its steady transition area on the lower resistance is implemented within the translinear amplifier.

47. **(Currently amended)** A method to control the capacitance of a variable capacitor in a strictly linear mode through a tuning voltage and to achieve a high Q-factor at the same time and to compensate the temperature deviation of the capacitor switching device; comprising:

providing a set of individual small capacitors, a set of capacitor switching stages, comprising: a ~~set of~~ switching devices with steady transition phase to continually switch on said capacitors in parallel, a ~~set of~~ translinear amplifier ~~stages~~ to produce said linear control~~s~~ for said switching functions, ~~a circuit to linearly control the switching function for each of said switching devices with steady transition phase,~~ a circuit to compensate the temperature deviation of said switching device, and a circuit to individually provide the threshold points for each individual capacitor switching stage, a circuit to provide a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said ~~translinear amplifier~~capacitor switching stages;

providing said threshold points for each individual capacitor switching stage;

supplying said signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said capacitor switching stages;

amplifying, with a translinear amplifier, the difference of said tuning voltage and said threshold points within each capacitor switching stage, to produce the linear control signal for a ramp-up/ramp-down switching operation;

continually switching on one of said switching devices with steady transition phase in order to switch one of said small capacitors in parallel to the already switched on capacitors, one after the other;

linearly controlling the switching function for each of said switching devices with steady transition phase; and

compensating the temperature deviation of said switching;

~~amplifying, by a translinear amplifier, the difference of the capacitance tuning voltage and the threshold points of each amplifier stage to produce the linear control signal for said continually switching operation;~~

~~providing said threshold points for each individual capacitor switching stage; and~~

~~supplying a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said translinear amplifier stages.~~

48. **(Original)** The method of claim **47** wherein compensating the temperature deviation of said switching device is provided by feeding a modified reference voltage to said translinear amplifier's output reference point, to mirror a temperature correcting signal into the control signal of said switching device.

49. **(Original)** The method of claim **48** compensating the temperature deviation of said switching device, uses a device of the same type as said switching device itself, to produce an exact equivalent of said temperature deviation.

50. (Cancelled)

~~50.A method to control the capacitance of a variable capacitor in a steady, but with predefined non-linear relation to the tuning voltage, through a tuning voltage and to achieve a high Q-factor at the same time; comprising:~~

~~providing a set of individual small capacitors, a set of switching devices with steady transition phase to continually switch on said capacitors in parallel, a circuit to linearly control the switching function for each of said switching devices with steady transition phase, a set of translinear amplifier stages to produce said linear controls for said switching functions, a circuit to individually provide the threshold points for each individual capacitor switching stage, a circuit to provide a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said translinear amplifier stages;~~

~~continually switching on one of said switching devices with steady transition phase in order to switch one of said small capacitors in parallel to the already switched on capacitors, one after the other;~~

~~linearly controlling the switching function for each of said switching devices with steady transition phase;~~

~~amplifying, by a translinear amplifier, the difference of the capacitance tuning voltage and the threshold points of each amplifier stage to produce the linear control signal for said continually switching operation;~~

~~providing said threshold points for each individual capacitor switching stage, producing non-linear instead of linear steps;~~

~~supplying a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said translinear amplifier stages; and~~

~~providing a non-linear relation between said tuning voltage and said threshold points.~~

51. **(Currently amended)** The method of claim ~~50~~**33** wherein individually providing said threshold points for each individual capacitor switching stage generates a set of reference values, one value for each capacitor switching stage~~.~~ in a non-linear relation between said tuning voltage and said threshold points

52. **(Currently amended)** The method of claim ~~51~~**51** wherein providing a non-linear relation between said tuning voltage and said threshold points is provided by specifically selecting the steps of said set of reference values in a way, to achieve said desired non-linear relation.